State of California
Regional Water Quality Control Board
North Coast Region

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January 23, 2004

EXECUTIVE OFFICER'S SUMMARY REPORT
9:00 a.m., February 11, 2004
North Coast Regional Water Board
Hearing Room
5550 Skylane Boulevard, Suite A
Santa Rosa, California

ITEM: 12

SUBJECT: Update on Investigation of Channel Modification Options to Reduce Flood Intensity in Elk River and Freshwater Creek

Background

Since 1997 the North Coast Regional Water Quality Control Board (Regional Water Board) has received complaints from residents in Elk River and Freshwater Creek watersheds that flood frequency and magnitude had increased over historical levels. These changed flooding conditions were associated with increased sediment deposition and impairment of beneficial uses of water, including domestic and agricultural water supplies, fisheries habitat, and recreation resources.

In response, the Regional Water Board has taken, and continues to take, actions in Elk River and Freshwater Creek to reduce controllable sources of soil discharge and restore beneficial uses of water. However, due in part to the accumulation of sediment in the channel, flooding remains an unresolved nuisance condition. Pacific Lumber Company, Redwood Sciences Laboratory, University of California, California Department of Forestry, Regional Water Board staff, and watershed residents and scientists have evaluated aspects of the flooding condition in these watersheds, however solutions for improvement have not yet been mutually identified.

By October 29, 2003, the Regional Water Board received a petition signed by sixty-four residents of the Elk River watershed requesting the Regional Water Board order Pacific Lumber Company to dredge the low gradient reaches of Elk River below Pacific Lumber Company's ownership as a means of reducing flooding in the watershed.

On January 23, 2004 (Attachment 1), the Executive Officer responded to the Elk River resident's petition. The response outlined Regional Water Board direction and staff efforts in evaluating the potential for channel modification activities.

Regional Water Board Direction

At the November 2003 Regional Water Board meeting, the Board directed staff to investigate options available to reduce the intensity and frequency of flood events affecting homes, agricultural fields, roads, and bridges in the two watersheds. Channel modification options included dredging, sediment retention basin construction, and removal of channel obstructions. These were some of the key options discussed by public commenters, staff, petitioners, industry

representatives, and as explored in the Humboldt Watersheds Independent Scientific Review Panel Phase I Report (Dec. 27, 2002).

At their December 3, 2003, meeting, the Regional Board heard information on and acknowledged the long-term and complex nature of the dredging option, but felt that interim steps should be looked into while the dredging option was being further explored. The Regional Water Board gave staff direction at their December 3, 2003 meeting, with the following motion,

> "The Board concludes that water quality benefits can be derived from short-term remediation actions. The Board therefore directs the EO to prepare a proposal for pursuing short-term in-stream remediation options, exclusive of dredging. The proposal will consider, among other appropriate measures, the removing of channel obstructions."

Update on Recent and Ongoing Fact Finding Efforts

Agency Scoping

Regional Water Board staff organized two scoping meetings with federal, state, and county agencies, held on December 2, 2003 and January 12, 2004 in Eureka. Summaries of these meetings are enclosed as Attachments 2 and 3, respectively. The agency representatives have provided helpful information, including examples of other projects, background information on the watersheds, contact names, necessary permits, and the extent of their support.

The agency representatives have estimated that the extensive permit requirements for the project would likely require National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) compliance and documentation with a time line of approximately five years for issuance of all necessary permits.

Emergency permits exist within some of the regulatory programs. The Army Corps of Engineers could issue an emergency permit to dredge. Their criterion include unanticipated damage to listed species, life, and property. However Army Corps staff does not believe they could issue an emergency permit because in the case of flooding in these watersheds the damage is not an "unanticipated" condition.

The Humboldt County Board of Supervisors could also request the involvement of the Office of Emergency Services as a means of financial assistance and other resources.

Numerous agencies have jurisdiction over portions of Elk River and permits from the federal, state and local agencies would be required for any channel modification efforts. Beyond permits, various agencies have programs that may be helpful for potential partnerships or technical assistance. The applicable permits and programs are generally outlined in Table 1.

Concerns expressed include potential headward channel incision, bank erosion, public funding to pay for project, dredging may not be the least impacting feasible alternative, and channel clearing could have a negative affect on fisheries and bank stability.

Table 1. Overview of Agencies with jurisdiction over channel modification, permits, and applicable programs.

Agency	Permit(s)	Assistance & Programs
Regional Water Quality Control Board	WDR (may be required) 401 Certification (required)	
California Department of Fish and Game	1603 Streambed Alteration Permit, Incidental Take Permit for Listed species	Technical assistance
California Coastal Commission	Coastal Development Permit	
Army Corps of Engineers	Wetland Nation-Wide Permit for Established Waterways	Partnership and cost-share programs, technical assistance
National Marine Fisheries Service	Biological Opinion based upon Biological Assessment	Technical assistance
US Fish and Wildlife Service	None	Section 17 consultation when apply for 404 CWA
Humboldt County Dept of Public Works	None	Road maintenance, ecosystem approach
Humboldt Bay Harbor Conservation and Recreation District	Harbor District Permit	
State Lands Commission	Public Trust Easement Dredging Lease Application	
Bureau of Land Management	None	
Office of Emergency Services	None	Potential Funding source
Humboldt County Board of Supervisors	None	Could request designations with OES
Environmental Protection Agency	None	To be determined
Federal Emergency Management Agency	None	

Field visits

As part of the channel modification investigation, Regional Water Board staff conducted numerous field visits to evaluate the extent, degree, and effect of sediment aggradation. On December 12, 2003 staff of the Regional Water Board and the Army Corps of Engineers visited Elk River and Freshwater Creek watersheds. The purpose of the trip was to provide an overview of the watersheds, sedimentation-related impacts, and current channel conditions to inform potential channel modification projects aimed at reducing flooding conditions. A summary of the field visit is provided as Attachment 4 to this report.

Regional Water Board staff have scheduled an additional agency field visit for January 30, 2004, to provide agencies participating in the scoping effort an opportunity to view watershed conditions and to discuss potential debris removal projects as a short-term option.

Applicable Literature

Staff continues to research applicable literature on the costs and benefits of channel modification. A useful paper "Prediction of Effects of Woody Debris Removal on Flow Resistance" (Shields and Gippel, 1995) discusses a model which predicts the effect of debris removal on reduction of flow resistance and increase in channel capacity. The study found that the increase in channel conveyance in the two rivers studied was between 6% and 22%. The authors point out that resistance due to flexible branches decreases with increasing water stage. In one of the rivers studied, the authors observed bank erosion and headward progression of channel incision.

Examples of Other Projects

Staff is researching other channel modification projects to learn about pros and cons of various options.

Among other projects brought to Regional Water Board staff's attention is the Salt River dredging project, located near Ferndale. The Resource Conservation District (RCD) was the local sponsor and requested the formation of a partnership with the Army Corps under their Ecosystem Restoration Program. A feasibility study is currently being developed for the Salt River project.

In 1975, the Humboldt County Supervisors directed the Department of Public Works to conduct stream clearance of Elk River between Spruce Point, upstream to Berta Road. The County partnered in a cost-share with an organization that provided crews. The program began in the fall of 1975, resulted in the clearing of 1300 feet of stream for a total of 244 person-days. During the first rains following the clearing, jams formed from floating material improperly placed after stream clearance. The log jams resulted in subsequent bank erosion and accelerated tree fall, adding additional material to the log jams. The Public Works Department concluded the clearing had not been effectual in solving upstream flooding. Their recommendation was to

discontinue the program due to the cost of project, the time required for completion, the annual maintenance cost, and unpredictable benefits.

Staff continue to seek information about other projects, including large wood removal from Freshwater and Salmon Creeks, both of Humboldt Bay as well as sediment catchment projects on a tributary to Morro Bay.

Feasibility Study

Prior to pursuing any channel modification project, it is necessary to conduct a feasibility study. Such a study would evaluate the nature and extent of aggradation contributing to flooding, the location, and effect of roughness elements and channel obstructions, hydraulic analyses considering channel geometry and stream discharge to correlate flood stages associated with different stream discharges. The analyses should be done for current conditions and potential modified conditions. To the extent possible, historic conditions may be estimated. Such a feasibility study is anticipated to be a significant project in terms of technical expertise, field staff resources, and associated cost.

Potential feasibility study options are outlined below, along with associated strengths and challenges, as identified by Regional Water Board staff.

1) Use Regional Water Board staff resources for field data collection and hydraulic analyses.

   Strength: Direct involvement and oversight of the study by staff.
   Challenges: Requires diversion of staff resources and funding from other projects and programs, including the source identification components of TMDLs. Does not explicitly incorporate outside expertise into evaluation, but that could be done as well, within the bounds of funding and expert availability.

2) Evaluate if the necessary findings exist to require Pacific Lumber Company to conduct or pay for the analyses via Regional Water Board authority under Section 13267(b).

   Strength: Responsive to petitioners. Not as extensive of a burden on Regional Water Board staff or funding resources.
   Challenges: The Regional Water Board would need to ensure that the record clearly supports a finding that Pacific Lumber Company is responsible for the conditions being remediated, and that this evidence supports and is commensurate with the costs imposed for the feasibility study. This would not have to be all or nothing: the order could limit the nature of Pacific Lumber Company's technical investigation obligation to be commensurate with whatever proportion of burden the facts support, and tailored to only those portions of the investigation that would be best accomplished in this way. Regional Water Board staff oversight would be more removed on the project under this approach.

3) Regional Water Board hires a third party consultant to conduct the analyses.

Strength: Independent party with necessary expertise. Regional Water Board staff could work closely with consultant.
Challenges: No funding available in foreseeable future.

4) Develop a collaborative process by which Regional Water Board, watershed scientists, residents, and Pacific Lumber Company share the cost and technical expertise required for the analyses.

Strength: Mechanism for all stakeholders to be involved and provide input and expertise. Transparent process.
Challenges: Cost to all parties. Not clear sources of funding. Contract would need to be developed to outline commitments. Potential for significant delays in striving to reach agreement.

5) Request the Army Corps to partner and conduct the feasibility analysis which would also satisfy the EIS/EIR evaluation required by NEPA and CEQA. Attachment 5 to this report provides an overview of the project development phases associated with the Army Corps partnership projects.

Strength: Clear process. Cost share. Accomplish environmental evaluation at same time as hydraulic analyses. Evaluates range of alternatives. Regional Water Board staff would have close involvement throughout the process. No requirement to implement the project following analyses.
Challenges: Request may not be granted by Army Corps. Will likely require significant time to accomplish study (~5 years). Once the feasibility study is completed, the sponsor must cost share between 35-50% of the project.

Recommendations

The following recommendations were developed within the framework that sediment discharges are best managed through a hierarchy of prevention, minimization, and mitigation. Prevention is the first step to ensure new sediment sources are avoided, minimization strategies are necessary for existing sediment sources, and any channel modification effort is viewed as mitigation or remediation. As such, staff makes the following recommendations regarding channel modification on the presumption and intent that sediment prevention and minimization strategies will be maximized in these heavily impacted watersheds through the implementation of all available permitting authorities (eg., team review process with CDF, WDRs, SB 810 findings, etc.). While channel modification options may be viewed as a short-term solution, the time frame for dredging is likely 5 years prior to commencement of construction operations.

1. Request a partnership with the Army Corps under their Continuing Assistance Program to assist in the evaluation of channel modification processes with significant cost-share available,

2. Develop a technical advisory committee with watershed scientists and Pacific Lumber Company. Unfortunately, funding is not currently available to compensate private individuals, however staff recommend pursuing the formation of such a group.

3. Issue a formal request to California Fish and Game and their cooperators to conduct salmonids utilization surveys in lower Elk River. These utilization surveys will provide valuable information on the potential fisheries impacts associated with channel modification.

4. Have staff review the files and evidence contained therein to evaluate the potential for amending existing or issuing new orders to require the Pacific Lumber Company to undertake some initial portion of the analyses necessary to support the larger effort of channel modification.

Attachments

Attachment 1: Catherine Kuhlman's January 23, 2004 Response to Elk River Petition from Bill Bertain and Residents.

Attachment 2: Elk River and Freshwater Creek Channel Modification Agency Scoping Meeting Minutes, December 2, 2003.

Attachment 3: Elk River and Freshwater Creek Channel Modification Agency Scoping Meeting Minutes, January 12, 2004.

Attachment 4: Regional Water Board Staff Overview of Field visit to Elk River and Freshwater Creek with the Army Corps of Engineers to Inform Potential Channel Modification Projects, December 19, 2003.

Attachment 5: Overview of Army Corps of Engineers Partnership Project Development Phases.